AGRICULTURE

Agriculture Department (http://www.csuchico.edu/ag/)
Plumas Hall 317
530-898-5844
Email: agoutreach@csuchico.edu
Department Chair: Eric E. Houk

University Farm (https://www.csuchico.edu/ag/university-farm/index.shtml/)  
Ag Teaching Rsrch Cntr 1501
530-898-6343
530-898-5952 (fax)
Email: rorellana3@csuchico.edu
University Farm Director: Ricardo Orellana

Insight

Agriculture is and will remain a major industry in the nation as well as in California. There is a steady, continuing supply of professional managerial jobs for well-educated people in agriculture and natural resource management. In response to the quality of our programs and the career opportunities, the number of majors in the College of Agriculture continues to rise.

Individuals enrolled in the College of Agriculture receive theoretical knowledge and practical experience—both very necessary in becoming the future leaders of this important economic sector. Students learn through an integrated approach about the complex set of interrelationships between agriculture, the environment, political and social forces, and other sectors of the economy.

Facilities

Excellent agricultural facilities include 800 acres of irrigated farmland and approximately 240 acres of rangeland. A variety of crops are grown at the University Farm. It has excellent orchards and croplands and hosts a variety of livestock to support the educational mission.

Barns, shops, greenhouses, orchards, and laboratories at the University Farm, along with ample classrooms and well-equipped laboratories on the main campus, provide students with a fine environment in which to study and learn about agriculture, natural resources and agricultural business management.

University Farm offers students the opportunity to obtain practical experience in many different areas of both plant and food animal production systems. In addition, students have excellent opportunities to participate in funded applied agricultural research activities conducted by faculty and staff.

Outlook

Career opportunities appear excellent. Federal reports indicate that in the 21st century there will be more professional job openings in the agricultural and natural resource management sectors than there will be qualified graduates to fill those positions. Some graduates in agriculture enter positions leading to management responsibilities on the farm or ranch, in industry, in business, in governmental land management and regulatory agencies, or in research and education.

Other agriculturists are finding employment in various agriculturally related careers such as purchasing, advertising, public relations, transportation, inspection, and market reporting. And still others have taken positions with agricultural cooperatives, food and dairy product companies, agrichemical manufacturing and sales companies, farm credit, and agricultural communications.

For today’s commercial farmer and natural resource manager, a degree in agriculture provides the technical and business background necessary to keep up with rapid changes that are taking place within the agricultural industry. The professional areas of teaching, agricultural extension, rural development, and basic or applied research also attract many graduates.

Programs

Undergraduate

Bachelor’s

• Agricultural Business BS (https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/agricultural-business-bs/)
• Agricultural Science BS (https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/agricultural-science-bs/)
• Animal Science BS (https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/animal-science-bs/)
• Plant and Soil Science BS (https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/plant-soil-science-bs/)

Minors

• Agricultural Business Minor (https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/agricultural-business-minor/)
• Agriculture Minor (https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/agriculture-minor/)
• Animal Science Minor (https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/animal-science-minor/)

Certificates

• Plant Protection Certificate (https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/plant-protection-certificate/)

Credentials

• Teaching Credential Program in Agriculture (https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/teaching-credential-program-agriculture/)

Pre-professionals

• Pre-Veterinary Program in Animal Science (https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/pre-veterinary-program-animal-science/)

Graduate

Master’s

• Agricultural Education MS (https://catalog.csuchico.edu/colleges-departments/college-agriculture/agriculture/agricultural-education-ms/)

See Course Description Symbols and Terms (https://catalog.csuchico.edu/academic-standards-policies/course-description-symbols-terms/) for an explanation of course description terminology and symbols, the course numbering system, and course credit units.
Agricultural Business

**ABUS 101 Introduction to Agricultural Business and Economics** 3 Units GE

Typically Offered: Fall and spring
The role of agricultural business in the economy. Introductory economic and business principles and their application to the solution of agricultural problems. 3 hours lecture. (000014)

General Education: Social Sciences (D)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

**ABUS 211 Agricultural Selling and Consulting** 3 Units

Typically Offered: Spring only
Application of selling and consulting techniques for agribusiness firms. 3 hours lecture. (015808)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

**ABUS 231 Computer Applications in Agriculture** 3 Units

Typically Offered: Fall and spring
Survey of microcomputer applications for agribusiness management, emphasizing personnel productivity software, including database manager, advanced spreadsheet, and electronic communication software. 3 hours lecture. (000025)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

**ABUS 250 Food Safety: Economics and Business** 3 Units

Prerequisite: ABUS 101 or equivalent.

Typically Offered: Spring only
This course explores the application of food safety from an economics and data analysis perspective. Managerial best practices related to food safety protocols and compliance are also included. 3 hours lecture. (022581)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

**ABUS 261 Farm Accounting** 3 Units

Typically Offered: Fall and spring
Introduction to the principles of farm accounting, farm business record keeping, agribusiness management, financial analysis, and enterprise budgeting. 1 hour discussion, 2 hours lecture. (000020)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

**ABUS 262 Management Accounting for Agriculture** 3 Units

Prerequisite: ABUS 261 or ACCT 201.

Typically Offered: Fall and spring
Cost concepts as a management tool in agriculture are explored. Budgeting techniques for planning and control and for long-term projects are developed. 2 hours activity, 2 hours lecture. (015011)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Lower Division

**ABUS 268 Special Topics** 1-3 Units

Typically Offered: Inquire at department
This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (000022)

Grade Basis: Graded

Repeatability: You may take this course more than once

Course Attributes: Lower Division

**ABUS 298 Special Topics** 1-3 Units

Typically Offered: Inquire at department
This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (000022)

Grade Basis: Graded

Repeatability: You may take this course more than once

Course Attributes: Lower Division

**ABUS 299 Special Problems** 1-3 Units

Prerequisite: Faculty permission.
Typically Offered: Fall and spring
This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor’s degree in agriculture. 9 hours supervision. (020956)

Grade Basis: Credit/No Credit

Repeatability: You may take this course for a maximum of 6 units

Course Attributes: Lower Division

**ABUS 300 Agricultural Business Competition** 1 Unit

Typically Offered: Fall and spring
This course prepares interested students for regional and national Quiz Bowl competition of the Agricultural and Applied Economics Association. Areas of preparation include agricultural business and economics, general agriculture, statistics, economics, accounting, finance management and marketing. 1 hour lecture. (015866)

Grade Basis: Credit/No Credit

Repeatability: You may take this course for a maximum of 8 units

Course Attributes: Upper Division

**ABUS 301 Agricultural Production Economics and Quantitative Analysis** 3 Units

Prerequisite: ABUS 101 or ECON 103.

Typically Offered: Fall and spring
Application of microeconomic theory to the agricultural production process, including single and multivariate production and cost functions, price determination in competitive and non-competitive markets and programs. 3 hours lecture. (000024)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 8 units

Course Attributes: Upper Division

**ABUS 311 Agricultural Markets and Pricing** 3 Units

Prerequisite: ABUS 101.

Typically Offered: Fall and spring
Economic principles applied to the marketing of agricultural products. Function, structure, and operation of agricultural markets. Introduction to the futures market. Trends in marketing of California agricultural crops and livestock. 3 hours lecture. (000026)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Upper Division

**ABUS 312 Wholesaling and Retailing Food Products** 3 Units

Prerequisite: ABUS 311.

Typically Offered: Fall only
This course covers principles and practices of distributing food from producer to consumer. The functions of wholesalers and intermediate handlers, including food brokers, are discussed. An in-depth analysis of the food retail industry is included. 3 hours lecture. (015010)

Grade Basis: Graded

Repeatability: You may take this course for a maximum of 3 units

Course Attributes: Upper Division
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
<th>Prerequisite(s)</th>
<th>Typically Offered</th>
<th>Course Attributes</th>
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</thead>
<tbody>
<tr>
<td>ABUS 321</td>
<td>Agribusiness Management</td>
<td>3</td>
<td>ABUS 101 or equivalent.</td>
<td>Fall and spring</td>
<td>Upper Division</td>
</tr>
<tr>
<td>ABUS 341</td>
<td>Natural Resource Economics</td>
<td>3</td>
<td>ABUS 101 or faculty permission.</td>
<td>Fall only</td>
<td>Upper Division; Sustainable Course</td>
</tr>
<tr>
<td>ABUS 350</td>
<td>International Agricultural Business Practices</td>
<td>3</td>
<td>ABUS 231, MATH 105.</td>
<td>Spring only</td>
<td>Upper Division</td>
</tr>
<tr>
<td>ABUS 389</td>
<td>Internship in Agribusiness</td>
<td>1-3</td>
<td>Permission of Internship Coordinator.</td>
<td>Spring, summer, fall</td>
<td>Upper Division</td>
</tr>
<tr>
<td>ABUS 390</td>
<td>World Food and Hunger Issues</td>
<td>3</td>
<td>GE Oral Communication (A1); GE Written Communication (A2); GE Critical Thinking (A3); GE Mathematics/Quantitative Reasoning (B4) requirements, or consent of the instructor.</td>
<td>Fall and spring</td>
<td>Upper Division; Global Cultures; Sustainable Course</td>
</tr>
<tr>
<td>ABUS 398</td>
<td>Special Topics</td>
<td>1-3</td>
<td>Inquire at department</td>
<td></td>
<td>Upper Division</td>
</tr>
<tr>
<td>ABUS 399</td>
<td>Special Problems</td>
<td>1-3</td>
<td>Upper-division standing, faculty permission.</td>
<td>Fall only</td>
<td>Upper Division</td>
</tr>
<tr>
<td>ABUS 411</td>
<td>Seminar in Agricultural and Food Marketing Planning</td>
<td>3</td>
<td>ABUS 311 or faculty permission.</td>
<td></td>
<td>Upper Division</td>
</tr>
<tr>
<td>ABUS 412</td>
<td>Agricultural and Food Marketing Competition</td>
<td>1</td>
<td>ABUS 311.</td>
<td></td>
<td>Upper Division</td>
</tr>
<tr>
<td>ABUS 415</td>
<td>Agribusiness Data Analysis</td>
<td>3</td>
<td>ABUS 231, MATH 105.</td>
<td></td>
<td>Upper Division</td>
</tr>
</tbody>
</table>
ABUS 421 Advanced Agribusiness Management 3 Units
Prerequisite: ABUS 301, ABUS 321, senior standing.
Typically Offered: Fall and spring
Agribusiness organization and management. Budgeting, input-output relationships, and enterprise analysis in decision making. Application of economic and management principles. Human resource management. 2 hours activity, 2 hours lecture. (000041)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

ABUS 425 Cooperatives Seminar 3 Units
Prerequisite: ABUS 101, ABUS 311, senior standing.
Typically Offered: Inquire at department
Cooperative principles and philosophy. Types and importance of cooperative activity in the U.S. Accounting for cooperative activity. 3 hours seminar. (000067)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Upper Division

ABUS 435 Commodity Futures and Options Markets 3 Units
Prerequisite: ABUS 231.
Typically Offered: Spring only
Application of strategies to manage risk in commodity markets through the understanding of forwards, futures, and options contracts. 3 hours lecture. (021696)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

ABUS 451W Agricultural Policy (W) 3 Units • W
Prerequisite: ABUS 301, ECON 102.
Typically Offered: Fall and spring
Domestic and international issues in U.S. agricultural food policy. A study of the major problems confronting agriculture, the process by which government formulates agricultural policy, and the socio-economic impact of current government programs. 3 hours lecture. (000029)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division
Writing Course

ABUS 464 Farm and Ranch Appraisal 3 Units
Prerequisite: ABUS 101.
Typically Offered: Fall only
Principles and techniques of farm and ranch appraisal. Valuation of farm and rural resources. 3 hours laboratory, 2 hours lecture. (000031)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division; Writing Course

ABUS 465 Agricultural Finance 3 Units
Prerequisite: ABUS 101 and ABUS 261.
Typically Offered: Fall and spring
Financing of agricultural enterprises. Principles, methods, and institutions involved in financing farming enterprises and related agricultural industries. Coordinated financial statements. Capital budgeting. 2 hours activity, 2 hours discussion. (000030)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

ABUS 487 Risk Management Strategies: Personnel & Equipment 3 Units
Typically Offered: Spring only
Study of risk management strategies in agriculture, including workplace safety, rules, and regulations. Equipment selection, maintenance, trends, and economics. Determining equipment requirements and costs. Systems for recording parts, services, and maintenance. 3 hours lecture. (000179)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

ABUS 489 Internship in Agri Business 1-3 Units
Typically Offered: Fall and spring
3 hours lecture. (000043)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 15 units
Course Attributes: Upper Division

ABUS 498 Special Topics 1-3 Units
Typically Offered: Inquire at department
This course is for special topics offered for 1.0-3.0 units respectively. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision. (000069)
Grade Basis: Graded
Repeatability: You may take this course more than once
Course Attributes: Upper Division

ABUS 499 Special Problems 1-3 Units
Prerequisite: Faculty permission.
Typically Offered: Fall and spring
This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 0 hours independent study. (000071)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Upper Division

ABUS 499H Honors Research in Agricultural Business 6 Units
Prerequisite: Faculty permission.
Typically Offered: Fall and spring
An intensive 6-unit, one-year course in agricultural business research. See College office for details. Open to students with at least a 3.0 GPA in the major. The course consists of a faculty-supervised research project, a thesis, and a public presentation. 18 hours independent study. (000072)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Upper Division

Agricultural Education

AGED 201 Introduction to Agricultural Education, Communication, and Leadership 3 Units
Typically Offered: Fall only
Objectives, facilitation, nature, and scope of agricultural literacy. Types of programs and career opportunities in agricultural education and literacy. 3 hours lecture. (000003)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division
AGED 210 Directed Field Experience Agricultural Education 2 Units
Typically Offered: Fall only
An individualized class in gaining teaching experience through observation and critique of high school students and teachers in the classroom, at FFA events, and in supervised occupational experiences. 2 hours lecture.  (000204)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Lower Division

AGED 321 Program Development in Agriculture Education 3 Units
Typically Offered: Spring only
Up-to-date approaches in integrated program development based on occupational opportunities and community needs. Philosophy, organization, and administration of agricultural education programs. Development of curriculum, supervised occupational experience, Future Farmers of America (FFA), and summer programs. 3 hours discussion. (000220)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

AGED 398 Special Topics 1-3 Units
Typically Offered: Inquire at department
Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 0 hours supervision. (022052)
Grade Basis: Credit/No Credit
Repeatability: You may take this course more than once
Course Attributes: Upper Division

AGED 399 Special Problems 1-3 Units
Typically Offered: Spring
This course is an independent study of a topic or problem. 0 hours supervision. (022548)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Upper Division

AGED 420 Techniques in Vocational Agricultural Instruction 3 Units
Prerequisite: AGED 201 or faculty permission.
Typically Offered: Spring only
Preparation for student teaching in agriculture. Orientation to classroom situations. Development of plans for teaching, including daily lessons and unit plans, utilization of source information, and resources. Class demonstration in teaching procedures, analysis, and evaluation. 3 hours discussion. (000208)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

AGED 421 Curriculum and Methods in Teaching Agricultural Mechanics 3 Units
Prerequisite: AGET 120, AGET 150 or equivalent.
Typically Offered: Fall only
Curriculum development and methods of teaching and motivating students in agricultural mechanics. 3 hours laboratory, 2 hours seminar. (000230)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

AGED 520 Supervised Teaching: Agriculture 10 Units
Prerequisite: Acceptance into the fifth-year program in agricultural education.
Typically Offered: Fall and spring
Supervised teaching in public secondary school daily for one semester. Candidate will arrange their schedule so that they are free from all campus obligations. 30 hours independent study. (000221)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 10 units
Course Attributes: Upper Division

AGED 521 Curriculum and Methods of Teaching Vocational Agriculture 3 Units
Prerequisite: Acceptance into the fifth-year program in agricultural education.
Typically Offered: Fall and spring
Principles of curriculum development in agriculture; methods of teaching and organization of teaching material. 3 hours seminar. (000222)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

AGED 600 Research Methodology in Agricultural Education 3 Units
Prerequisite: Graduate status.
Typically Offered: Spring, summer, fall
Research methods are presented in support of decision-making in a scientifically literate world. Literature, logic, and research methodologies for quantitative paradigms are presented. Studies in the social sciences are emphasized. Students prepare a proposal for their thesis, dissertation, or creative component. The goal of this course is to gain an understanding of the theory and practice of social science research through critical evaluation of the research literature and by developing a research proposal. 9 hours independent study. (021209)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Graduate Division

AGED 601 Program Planning in Agricultural Education 3 Units
Prerequisite: Graduate status.
Typically Offered: Spring, summer, fall
Development of a total agricultural education program in communities using all available resources. The purpose of this course is to expose students to a variety of situations and experiences that improve their ability to develop and implement effective education programs in formal and non-formal community education settings. To achieve this desired end, students (a) acquire an understanding of program development from theory to practice and (b) strengthen or develop their skills in planning, designing, implementing, evaluating, and accounting for educational programs for targeted audiences. 3 hours lecture. (021210)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Graduate Division
<table>
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<tr>
<th>Course Code</th>
<th>Course Title &amp; Description</th>
<th>Credits</th>
<th>Prerequisite</th>
<th>Typically Offered</th>
<th>Grade Basis</th>
<th>Repeatability</th>
<th>Course Attributes</th>
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</thead>
<tbody>
<tr>
<td>AGED 602</td>
<td>Instructional Methods in Agricultural Education</td>
<td>3 Units</td>
<td>Graduate status.</td>
<td>Spring, summer, fall</td>
<td>Graduate Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Graduate Division</td>
</tr>
<tr>
<td>AGED 603</td>
<td>Agricultural Leadership, Supervision, and Administration</td>
<td>3 Units</td>
<td>Graduate status.</td>
<td>Spring, summer, fall</td>
<td>Graduate Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Graduate Division</td>
</tr>
<tr>
<td>AGED 604</td>
<td>Program Evaluation in Agricultural Education</td>
<td>3 Units</td>
<td>Graduate status.</td>
<td>Spring, summer, fall</td>
<td>Graduate Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Graduate Division</td>
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<tr>
<td>AGED 605</td>
<td>Adult Learners in Agricultural Education</td>
<td>3 Units</td>
<td>Graduate status.</td>
<td>Spring, summer, fall</td>
<td>Graduate Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Graduate Division</td>
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<tr>
<td>AGED 606</td>
<td>Critical and Creative Thinking in Agricultural Education</td>
<td>3 Units</td>
<td>Graduate status.</td>
<td>Spring, summer, fall</td>
<td>Graduate Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Graduate Division</td>
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<tr>
<td>AGED 607</td>
<td>Agricultural Education Foundations, History, and Philosophy</td>
<td>3 Units</td>
<td>Graduate status.</td>
<td>Spring, summer, fall</td>
<td>Graduate Graded</td>
<td>You may take this course for a maximum of 3 units</td>
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<tr>
<td>AGED 608</td>
<td>Teaching Diverse Learners in Agricultural Education</td>
<td>3 Units</td>
<td>Graduate Status.</td>
<td>Spring, summer, fall</td>
<td>Graduate Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Graduate Division</td>
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<tr>
<td>AGED 609</td>
<td>Philosophy and Policy in Agricultural Education</td>
<td>3 Units</td>
<td>Graduate status.</td>
<td>Spring, summer, fall</td>
<td>Graduate Graded</td>
<td>You may take this course for a maximum of 3 units</td>
<td>Graduate Division</td>
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<td>Course Code</td>
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<td>Units</td>
<td>Prerequisite</td>
<td>Typically Offered</td>
<td>Description</td>
<td>Grade Basis</td>
<td>Repeatability</td>
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<td>AGED 610</td>
<td>Assessment in Agricultural Education</td>
<td>3 Units</td>
<td>Graduate status</td>
<td>Spring, summer, fall</td>
<td>This course is designed to help educators develop an understanding of assessment relevant to agricultural education. Students learn to develop, administer, and analyze formal, informal, and performance assessment techniques to monitor and evaluate student learning and to make necessary modifications. 9 hours independent study. (021216)</td>
<td>Graduate</td>
<td>You may take this course for a maximum of 3 units</td>
</tr>
<tr>
<td>AGED 611</td>
<td>Curriculum Development in Agricultural Education</td>
<td>3 Units</td>
<td>Graduate status</td>
<td>Fall and spring</td>
<td>The primary purpose of this course is to provide students with the skills needed to develop an understanding of the historical and philosophical foundations of agricultural education. Students explore the development of agricultural education, examine the role of policy and its influence on the direction of agricultural education. 9 hours of lecture. (021852)</td>
<td>Graduate</td>
<td>You may take this course for a maximum of 3 units</td>
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<tr>
<td>AGED 612</td>
<td>Communicating Ethical Issues in Agriculture</td>
<td>3 Units</td>
<td>Graduate status</td>
<td>Spring, summer, fall</td>
<td>This course is designed to teach students to better be able to articulate agricultural issues in an ethical theory context. Students learn to explore how topics from proponents and opponents of agricultural and natural resources practices are communicated and to improve their understanding of communicating agricultural ethical issues. 9 hours independent study. (021391)</td>
<td>Graduate</td>
<td>You may take this course for a maximum of 3 units</td>
</tr>
<tr>
<td>AGED 613</td>
<td>History and Philosophy of Agricultural and Extension</td>
<td>3 Units</td>
<td>Graduate status</td>
<td>Spring, summer, fall</td>
<td>The primary purpose of this course is to provide students with an examined grounding in the seminal events and people in the history of agriculture (history), principle divisions of thought, and decisions made, resulting in the current state of affairs in agricultural and extension education. Students learn about the historical context of agricultural and extension education and how it has influenced the present. The course covers the history of agriculture and extension education. 9 hours independent study. (021381)</td>
<td>Graduate</td>
<td>You may take this course for a maximum of 3 units</td>
</tr>
<tr>
<td>AGED 614</td>
<td>Grant Seeking in Agricultural Education</td>
<td>3 Units</td>
<td>Graduate status</td>
<td>Spring, summer, fall</td>
<td>This course seeks to identify and explain the principles, theory, and techniques of effective proposal development for foundation and government agencies. Students learn about the process of developing proposals that follow RFP guidelines including a literature review, need for the project, approach, timeline, and budget. 9 hours independent study. (021390)</td>
<td>Graduate</td>
<td>You may take this course for a maximum of 3 units</td>
</tr>
<tr>
<td>AGED 615</td>
<td>Information Technologies in Agricultural Education</td>
<td>3 Units</td>
<td>Graduate status</td>
<td>Spring, summer, fall</td>
<td>This course is designed to provide educators with the skills needed to develop an understanding of the role of technology in agricultural education. Students learn about the role of information technology in agricultural education and explore the integration of technology into agricultural education. 9 hours independent study. (021389)</td>
<td>Graduate</td>
<td>You may take this course for a maximum of 3 units</td>
</tr>
<tr>
<td>AGED 617</td>
<td>Knowledge Management in Agricultural Education and</td>
<td>3 Units</td>
<td>Graduate status</td>
<td>Spring, summer, fall</td>
<td>Knowledge Management is a discipline that takes a comprehensive, systematic approach to the information assets of an organization by identifying, capturing, organizing, indexing, storing, integrating, retrieving, and sharing them. This course examines knowledge management as it is emerging and being applied in agriculture and natural resources. 9 hours independent study. (021389)</td>
<td>Graduate</td>
<td>You may take this course for a maximum of 3 units</td>
</tr>
<tr>
<td>AGED 619</td>
<td>Volunteering Management in Agricultural Education</td>
<td>3 Units</td>
<td>Graduate status</td>
<td>Fall and spring</td>
<td>This course is designed to teach students to better be able to articulate agricultural issues in an ethical theory context. Students learn to explore how topics from proponents and opponents of agricultural and natural resources practices are communicated and to improve their understanding of communicating agricultural ethical issues. 9 hours independent study. (021381)</td>
<td>Graduate</td>
<td>You may take this course for a maximum of 3 units</td>
</tr>
</tbody>
</table>
AGED 620 Online Media in Agricultural Education and Communication 3 Units
Prerequisite: Graduate status.
Typically Offered: Spring, summer, fall
The convergence of multiple forms of media - newspaper, video, radio, and photojournalism - on the Internet is impacting how agricultural communicators provide information on various topics. The increasing presence of social media also impacts how agricultural messages are communicated. Agricultural communicators should understand how audiences in agriculture and natural resources utilize online media and for what purposes. 9 hours independent study. (021380)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Graduate Division

AGED 621 Advanced Methods of Teaching Agricultural Education 3 Units
Prerequisite: Graduate status.
Typically Offered: Spring, summer, fall
This course is designed for professional educators who want to improve their teaching practice. The goal of every good teacher is to create effective learning experiences for students, but how do you create those learning experiences in a challenging school environment? 9 hours independent study. (021387)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Graduate Division

AGED 622 Priority Management in Agricultural and Extension Education 3 Units
Prerequisite: Graduate status.
Typically Offered: Spring, summer, fall
Examination of theoretical, psychological, and empirical bases for strategies and techniques that contribute to enhancing managerial and personal effectiveness of agricultural educators and individuals in related agricultural organizations. 3 hours independent study. (021379)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Graduate Division

AGED 623 Ethics and Ethical Applications in Agricultural Leadership 3 Units
Typically Offered: Fall and spring
Ethical reasoning skills necessary for making decisions in agricultural leadership. Emphasis is given to developing an ethical mindset towards human diversity in organizations, social and leadership positions responsibility. Topics include: purpose of the ethics in leadership, the nature of ethics, ethical dilemmas, ethical decision making, diversity in organizations (based on race, ethnicity and accent, age, skin color, religion, physical abilities, sexual orientation and gender) and social responsibility in the agricultural industry. The main focus is to develop ethically and socially responsible leaders and organizational members in the agricultural industry. 3 hours lecture. (021855)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Graduate Division

AGED 624 Technological Applications in Agricultural Leadership 3 Units
Typically Offered: Fall and spring
Overview of essential computing, data analysis, and technology applications used in agricultural leadership positions and the agricultural industry. In depth instruction using specific technologies to advance students skills in industry in the 21st century. Emphasized the use of various technology tools to support practices, communication, and the proving of change in agricultural leadership. 3 hours lecture. (021854)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Graduate Division

AGED 625 Technological Change in Agricultural Education 3 Units
Prerequisite: Graduate status.
Typically Offered: Spring, summer, fall
Processes by which professional change agents in agricultural and extension education influence the introduction, adoption, and diffusion of planned technological change. 9 hours independent study. (021383)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Graduate Division

AGED 630 Leadership in Agricultural Organizations 3 Units
Typically Offered: Fall and spring
This course focuses on leadership potential development of students to serve in various agribusiness's, organizations, and associations. Course content includes an investigation and critical analysis of major leadership theories and models. The course serves to facilitate the expansion of the sphere of leadership influence of agriculturalists in their communities and homes. 3 hours lecture. (021872)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Graduate Division

AGED 650 Advanced Agricultural Issues 3 Units
Typically Offered: Fall and spring
This advanced course is designed to develop critical thinking and writing skills and develop an understanding of current issues facing the agricultural industry. Students gain an appreciation for the diversity of agricultural and agricultural policies. 3 hours lecture. (021850)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Graduate Division

AGED 689 Graduate Internship in Agriculture 1-6 Units
Prerequisite: Graduate status.
Typically Offered: Spring, summer, fall
The objective of the graduate internship program is to enhance the technical, professional and/or leadership capabilities of employees involved in agriculture production, service, education, business, communication and/or research organizations. Graduate students received practical experience in a wide variety of agricultural science related fields, including, production, business, teaching, service, communication, and research. The internship program may also serve to acquaint student interns with agricultural practices, while establishing valuable professional contacts in their chosen field. Additionally, the internship offers opportunity for professional growth. The internship may be spent in the private or public sector. 0 hours independent study. (021436)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Graduate Division
AGED 692 Instrumentation in Agricultural Education  1 Unit
Typically Offered: Fall only
Students should demonstrate an understanding of data collection instruments, including both qualitative and quantitative instrumentation. Students design and develop an instrument in preparation for a pilot study. 1 hour lecture. (022588)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 1 unit
Course Attributes: Graduate Division

AGED 694 Data Analysis in Agricultural Education  2 Units
Typically Offered: Fall only
Students learn quantitative and qualitative data analysis techniques to derive meaning from a data set. Students analyze data collected from previously designed instruments. 2 hours lecture. (022590)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Graduate Division

AGED 695 Professional Paper in Agricultural Education  3 Units
Typically Offered: Spring, summer, fall
Students should demonstrate an effective understanding of research, program planning, teaching methodology, and assessment as required components of the Master of Science in Agricultural Education. A formal paper prepared to submit to the Journal of Agricultural Education, National American College and Teachers of Agricultural Journal or similar peer-review journal or regional or national research conference is expected. 3 hours lecture. (022591)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Graduate Division

AGED 696 Comprehensive Examination in Agricultural Education  3 Units
Prerequisite: Graduate status.
Typically Offered: Spring, summer, fall
This graduate level course is designed to demonstrate an understanding and application of research through the creation of independent and original work, culminating in a scholarly research paper. The master's thesis must document original student research in a scholarly presentation capable of submission to research conferences or a professional journal. The thesis should address a particular need in agricultural education and inform practice. 9 hours independent study. (021217)
Grade Basis: Report in Progress: CR/NC
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Graduate Division

AGED 699P Master's Project in Agricultural Education  3-6 Units
Prerequisite: Graduate status.
Typically Offered: Spring, summer, fall
This course is designed to demonstrate an understanding and application of research through the creation of independent and original work, culminating in a scholarly project. The master's project must document original student work and must be of sufficient quality to share with other professionals. The final project should address a particular need in agricultural education, included documented research, and be presented in a scholarly format. 9 hours independent study. (021218)
Grade Basis: Report in Progress: CR/NC
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Graduate Division

AGED 699T Master's Thesis in Agricultural Education  3-6 Units
Prerequisite: Graduate status.
Typically Offered: Spring, summer, fall
This course is designed to demonstrate an understanding and application of research through the creation of independent and original work, culminating in a scholarly research paper. The master's thesis must document original student research in a scholarly presentation capable of submission to research conferences or a professional journal. The thesis should address a particular need in agricultural education and inform practice. 18 hours independent study. (021219)
Grade Basis: Report in Progress: CR/NC
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Graduate Division

Agricultural Engineering Technology

AGET 120 Introduction to Agricultural Mechanics  3 Units
Typically Offered: Spring only
Selection, care, and use of common tools; study of safety, common materials and skills used in electrical, plumbing, woodworking, metal work, and land measurement in the field of agriculture. 3 hours laboratory, 2 hours lecture. (000166)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

AGET 150 Agricultural Machine Systems  3 Units
Typically Offered: Fall only
Principles of operation, adjustments, calibration, and safety of wheel and track-type tractors including implements and equipment commonly used in California agriculture. 3 hours laboratory, 2 hours lecture. (000164)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

AGET 198 Special Topics  1-3 Units
Prerequisite: Department permission.
Typically Offered: Fall and spring
This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision. (000169)
Grade Basis: Graded
Repeatability: You may take this course more than once
Course Attributes: Lower Division
AGET 298  Special Topics  1-3 Units
Typically Offered: Inquire at department
This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (020966)
Grade Basis: Graded
Repeatability: You may take this course more than once
Course Attributes: Lower Division

AGET 299  Special Problems  1-3 Units
Prerequisite: Faculty permission.
Typically Offered: Fall and spring
This course is an Independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor’s degree in agriculture. 9 hours supervision. (020957)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Lower Division

AGET 320  Agricultural Mechanics Project Development  2 Units
Prerequisite: AGET 120
Typically Offered: Spring only
Medium-sized project development techniques for agricultural mechanics instruction. Emphasis is on curriculum development, materials, planning, and construction techniques typically used in secondary instruction for construction courses and SAE. 1 hour discussion, 3 hours laboratory. (022526)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Upper Division

AGET 340  GPS & GIS in Agriculture and Natural Resource Management  3 Units
Typically Offered: Fall only
Application of Global Positioning Systems (GPS) and Geographic Information Systems (GIS) in agriculture and natural resource management. Identification and delineation of locations and areas; collection, analysis, storage, and retrieval of site and time specific data for agriculture and natural resource management and monitoring. 3 hours laboratory, 2 hours lecture. (000168)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division; Sustainable Course

AGET 360  Irrigation  3 Units
Prerequisite: PSSC 101 or PSSC 250 or faculty permission.
Typically Offered: Spring only
Design, management, and evaluation of landscape and agricultural irrigation systems for efficient water use. 3 hours laboratory, 2 hours lecture. (000170)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division; Sustainable Course

AGET 389  Internship in Agricultural Engineering Technology  1-3 Units
Prerequisite: Prior approval of academic goals by the Internship Coordinator.
Typically Offered: Spring, summer
This course is an internship offered for 1.0-3.0 units. You must register directly with a supervising faculty member. Work experience with selected farm machinery shop or corporations is to be completed and supervised by faculty and staff of cooperating ranch or industry. 0 hours independent study. (000174)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 15 units
Course Attributes: Upper Division

AGET 398  Special Topics  1-3 Units
Typically Offered: Inquire at department
This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (000176)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Upper Division

AGET 399  Special Problems  1-3 Units
Prerequisite: Upper-division standing, faculty permission.
Typically Offered: Fall and spring
This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research in agriculture under direct supervision of a faculty member. A maximum of 6 units may be applied toward a bachelor’s degree in agriculture. 0 hours independent study. (000177)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Upper Division

AGET 489  Internship in Agri Engineering  1-3 Units
Typically Offered: Fall and spring
3 hours lecture. (000180)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 15 units
Course Attributes: Upper Division

AGET 498  Special Topics  1-3 Units
Prerequisite: Department permission.
Typically Offered: Fall and spring
This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision. (000184)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 15 units
Course Attributes: Upper Division

AGET 499  Special Problems  1-3 Units
Prerequisite: Faculty permission.
Typically Offered: Fall and spring
This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 0 hours independent study. (000186)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Upper Division
Agriculture

AGRI 180  The University Experience  1 Unit
Typically Offered: Fall and spring
A college success course for agricultural majors new to California State University, Chico. The course will explore the academic and social opportunities and resources available to promote successful completion of the student's educational goals. 1 hour discussion. (000198)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 1 unit
Course Attributes: Lower Division

AGRI 181 Coordinating Group Agricultural Activities  1-2 Units
Typically Offered: Fall and spring
An individualized class designed to develop and refine the student's ability to organize and coordinate Agriculture field days and other related group activities. Maximum of four semesters and/or four units toward BS degree. 1 hour lecture. (000190)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Lower Division

AGRI 198 Special Topics  1-3 Units
Typically Offered: Fall and spring
This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 1 hour seminar. (000202)
Grade Basis: Graded
Repeatability: You may take this course more than once
Course Attributes: Lower Division

AGRI 280 Agriculture Ambassadors  1 Unit
Prerequisite: Faculty Permission.
Typically Offered: Fall and spring
This course is designed to train, develop, and support students that serve in the Agriculture Ambassador role in the College of Agriculture (COA). In this course students learn about the COA and discover their own leadership and communications styles. Students work in teams to organize events and manage COA outreach. Students learn how to effectively represent the COA to numerous constituents, mostly prospective students. Outside of the class meeting time, they give tours, presentations, and conduct meetings. Students participate in leadership development, team building, information gathering, and service skill development activities. 2 hours activity. (021407)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Lower Division

AGRI 298 Special Topics  1-3 Units
Typically Offered: Inquire at department
This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 9 hours seminar. (020965)
Grade Basis: Graded
Repeatability: You may take this course more than once
Course Attributes: Lower Division

AGRI 299 Special Problems  1-3 Units
Prerequisite: Faculty permission.
Typically Offered: Fall and spring
This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 9 hours supervision. (020958)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Lower Division

AGRI 301 California Agriculture Seminar  3 Units
Prerequisite: Junior or senior standing or faculty permission
Typically Offered: Spring only
Survey of the production, processing, and distribution of major agricultural commodities. The history, economics, scope, geographical location, general cultural practices, and marketing opportunities of major commodities are discussed. In addition, major issues confronting California agriculture systems are explored. A midday field trip is required in the course. 3 hours seminar. (021777)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

AGRI 305 Agricultural Genetics  3 Units
Prerequisite: ANSC 101 or PSSC 101; CHEM 107 or CHEM 111.
Typically Offered: Fall and spring
Mendelian inheritance, gene structure and action, sex-related inheritance, linkage and mapping, aneuploidy, polyploidy, population and quantitative inheritance, inbreeding and heterosis. 3 hours lecture. (000211)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

AGRI 331 Agricultural Ecology  3 Units
Prerequisite: Completion of lower-division core or faculty permission.
Typically Offered: Fall and spring
An interdisciplinary treatment of physical and biological environments used for agriculture. Historical and ecological nature of agriculture its impact on the landscape and society. Comparison of sustainable and non-sustainable agricultural practices. 3 hours laboratory, 2 hours lecture. (000206)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division; Sustainable Course

AGRI 380A Agricultural Leadership  3 Units
Typically Offered: Fall only
An investigation of leadership from an individual perspective. Study of introduction to the principles and practices of positive interpersonal relationships for leadership development in the Agricultural Industry. 3 hours seminar. (000216)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division
AGRI 380B Leadership in the Workplace  
**Prerequisite:** AGRI 380A or faculty permission.  
**Typically Offered:** Spring only  
An exploration of real world leadership. Development of leadership and interpersonal skills valued in the Agricultural sector. Tropics include job search skills, professional resumes, cover letters, and interviewing as well as the skills needed in the workplace. 3 hours seminar. (000217)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division

AGRI 389 Internship in Agriculture  
**Prerequisite:** Prior approval of academic goals by the Internship Coordinator.  
**Typically Offered:** Spring, summer, fall  
This course is an internship offered for 1.0-12.0 units. You must register directly with a supervising faculty member. Work experience with selected agricultural enterprises is supervised by faculty and staff of a cooperating enterprise. 0 hours independent study. (000218)  
**Grade Basis:** Credit/No Credit  
**Repeatability:** You may take this course for a maximum of 15 units  
**Course Attributes:** Upper Division

AGRI 398 Special Topics  
**Typically Offered:** Inquire at department  
This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (000218)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course more than once  
**Course Attributes:** Upper Division

AGRI 399 Special Problems  
**Prerequisite:** Upper-division standing, faculty permission.  
**Typically Offered:** Fall and spring  
This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research in agriculture under direct supervision of a faculty member. A maximum of 6 units may be applied toward a bachelor's degree in agriculture. 0 hours independent study. (000219)  
**Grade Basis:** Credit/No Credit  
**Repeatability:** You may take this course for a maximum of 6 units  
**Course Attributes:** Upper Division

AGRI 432 Holistic Management  
**Prerequisite:** AGRI 331 or faculty permission.  
**Typically Offered:** Spring only  
A study of sustainable management practices in the context of agricultural land stewardship. The development of practical skills and understanding paramount to leadership and management of personal and professional activities. The focus is on identifying available resources, clarifying goals, developing action plans, and promoting communication, savvy monitoring, and decision making that expedite progress toward a thriving enterprise and contribute to a sustainable community. Case studies, community activities, and discussion explore the impact of management decisions on progress toward desired goals. 3 hours lecture. (000225)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division; Sustainable Course

AGRI 450 Regenerative Agriculture Management Systems  
**Typically Offered:** Spring only  
This course addresses carbon-smart farming practices and focuses on a systems approach to farming and food production, designed to restore balance to the carbon cycle, while improving water use efficiency and soil health. Students learn the theory of regenerative agriculture from a scientific and soil health perspective, as regenerative agriculture techniques and practices enhance biological diversity, support ecological services, and reduce greenhouse gas emissions. 3 hours lecture. (022587)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division

AGRI 482W Agricultural Issues (W)  
**Prerequisite:** GE Written Communication (A2) requirement, senior standing or faculty permission.  
**Typically Offered:** Fall and spring  
An examination of major issues confronting agriculture emphasizing critical thinking, research, and balancing complex, and often opposing views of the role of agriculture in society. The course uses group work and presentations to enhance written and oral communication skills. This is the capstone course for AGRI, ANSC, and ABUS majors. 3 hours lecture. (000229)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division; Writing Course; Graduation Writing Assessment

AGRI 489 Internship in Agriculture  
**Typically Offered:** Fall and spring  
3 hours lecture. (000227)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 15 units  
**Course Attributes:** Upper Division

AGRI 490W Agricultural Experimental Research (W)  
**Typically Offered:** Fall and spring  
Students design and execute applied agriculture research projects that seek to improve the management of agricultural enterprises. Students learn the most common experimental designs for agricultural research, utilize computer programs to analyze and interpret experimental data and further develop scientific writing skills. 1 hour discussion, 3 hours lecture. (000223)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 4 units  
**Course Attributes:** Upper Division; Writing Course

AGRI 498 Special Topics  
**Typically Offered:** Fall and spring  
This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision. (000231)  
**Grade Basis:** Graded  
**Repeatability:** You may take this course more than once  
**Course Attributes:** Upper Division
Animal Science

ANSC 101 Introduction to Animal Science 3 Units
Typically Offered: Fall and spring
An overview, using a scientific perspective, of farm animals. Highlights anatomy and physiology of farm animals, reproduction, nutrition, animal health, animal products, animal behavior, and pertinent social issues, such as animal rights. Includes human opportunity to influence trait inheritance, population densities, and productivity. 3 hours laboratory, 2 hours lecture. (000419)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

ANSC 120 Livestock Skills 3 Units
Typically Offered: Spring only even years
An introduction to selection, nutrition, health, and management of beef, sheep, swine, and dairy for livestock youth programs, including ethical practices associated with livestock exhibition. This class is designed primarily for students pursuing a career in agricultural education. 3 hours laboratory, 2 hours lecture. (000446)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

ANSC 160 Veterinary Practices 2 Units
Typically Offered: Fall and spring
Designed to allow the student to become familiar with various vaccines, equipment, and restraining techniques used in routine treatment of farm animals. Selection of proper materials, veterinary nomenclature, actual handling and treatment of farm animals involved. 3 hours laboratory, 1 hour lecture. (000436)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Lower Division

ANSC 198 Special Topics 1-3 Units
Typically Offered: Fall and spring
This course is for special topics. 3 hours seminar. Graded
Grade Basis: Graded
Repeatability: You may take this course more than once
Course Attributes: Lower Division

ANSC 199 Special Problems 1-3 Units
Prerequisite: Faculty permission.
Typically Offered: Fall and spring
This course is an independent study of a topic or problem. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 0 hours supervision. Graded
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Lower Division

ANSC 499 Special Problems 1-3 Units
Prerequisite: Faculty permission.
Typically Offered: Fall and spring
This course is for special topics offered for 1.0-3.0 units. Typically the course consists of a faculty-supervised research project, a thesis, and a public presentation. 18 hours independent study. Graded
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Upper Division

ANSC 697 Independent Study 1-4 Units
Typically Offered: Fall and spring
9 hours supervision. (000240)
Grade Basis: Report in Progress: Graded
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Graduate Division

AGRI 99H Honors Research in Agriculture 6 Units
Typically Offered: Fall and spring
An intensive 6-unit, one-year course in agricultural research. See College office for details. Open only to students with at least a 3.0 GPA in the major. The course consists of a faculty-supervised research project, a thesis, and a public presentation. 18 hours independent study. (000233)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Upper Division

AGRI 695 Graduate Seminar in Regenerative Agriculture 1 Unit
Typically Offered: Fall and spring
This course is designed to support graduate study in Sustainable/Regenerative/Climate Smart/Innovative agriculture and provide opportunities to share ideas and apply knowledge of experimental design, data management techniques, and statistical applications for specific field applications. Each student presents their own independent research, or thesis project or may present journal articles as a component of their exploration into this field of study. Students present their work through oral and poster presentations. 1 hour seminar. (022473)
Grade Basis: Graduate Graded
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Graduate Division; Sustainable Course

AGRI 697 Independent Study 1-4 Units
Typically Offered: Fall and spring
9 hours supervision. (000240)
Grade Basis: Report in Progress: Graded
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Graduate Division

AGRI 698 Special Topics 1-3 Units
Typically Offered: Inquire at department
This course is for special topics. 3 hours seminar. Graded
Grade Basis: Graduate Graded
Repeatability: You may take this course more than once
Course Attributes: Graduate Division

AGRI 100 Introduction to Food Animal Systems 3 Units
Typically Offered: Fall and spring
An overview of the foundations of the animal science industry, this course explores the basic terminology and food animal species that are produced in the United States. Students have the opportunity to explore how food is produced from livestock and to review scientific literature regarding best production practices. 3 hours lecture. (022552)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

AGRI 120 Livestock Skills 3 Units
Typically Offered: Spring only even years
An introduction to selection, nutrition, health, and management of beef, sheep, swine, and dairy for livestock youth programs, including ethical practices associated with livestock exhibition. This class is designed primarily for students pursuing a career in agricultural education. 3 hours laboratory, 2 hours lecture. (000446)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

AGRI 198 Special Topics 1-3 Units
Typically Offered: Fall and spring
This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term. See the Class Schedule for the specific topic being offered. 3 hours lecture. (000454)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Lower Division

AGRI 199 Special Problems 1-3 Units
Prerequisite: Faculty permission.
Typically Offered: Fall and spring
This course is an independent study of a topic or problem. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 0 hours supervision. (022140)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Lower Division
ANSC 220 Introduction to Livestock Evaluation 3 Units
Prerequisite: ANSC 101.
Typically Offered: Spring only
This course provides students a fundamental understanding of how to evaluate market and breeding beef, sheep, goats, and swine utilizing both visual appraisal as well as objective performance records. Students are given a framework to make decisions with an objective approach to select animals based on certain criteria and standards. Students who demonstrate proficiency in understanding selection at its most basic level, as well as demonstrate effectiveness in oral reasons have an opportunity to participate on the Intercollegiate Livestock Judging Team at CSU, Chico. 2 hours activity, 2 hours seminar. (022077)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

ANSC 230 Animal Feeds and Nutrition 3 Units
Typically Offered: Fall and spring
An introduction to the nutrition of domestic and wild animals with emphasis on appropriate nutrition for various activities. A survey of the integration of feed production and animal production systems. Computer formulation and analysis of diets to achieve desired performance levels of animals. 2 hours activity, 2 hours lecture. (000434)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

ANSC 250 Live Animal and Carcass Evaluation 3 Units
Typically Offered: Spring only
Evaluation of market livestock as related to growth and development, production efficiency, carcass merit, selection of breeding animals based on performance, production records and visual appraisal. Specific reference to factors determining carcass value. 2 hours activity, 2 hours seminar. (000445)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

ANSC 271 Principles of Beef Cattle Production 3 Units
Typically Offered: Fall only
An overview of the United States beef industry including an introduction to the segments of the beef production chain and the scope of the industry. The majority of the course focuses on basic principles including genetics and breeding, nutrition, reproduction, herd health, carcass evaluation and marketing. 3 hours lecture. (020992)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

ANSC 274 Principles of Dairy Production 3 Units
Typically Offered: Fall only
An overview of the United States dairy industry, emphasizing the life cycle of the dairy cow. Topics include calf raising, heifer development, dry cow management, and lactation management. Within each stage of production, discussion may include health, nutrition, reproduction, and genetics. Additionally, facilities management and cow comfort are introduced. 3 hours lecture. (021029)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

ANSC 276 Principles of Meat Science 3 Units
Typically Offered: Spring only
Principles of Meat Science in an introductory course in meat science organized to increase student knowledge of muscle foods-their properties, value, and appropriate handling procedures. Current meat processing technologies are presented and pertinent aspects of the meat industry are also discussed. 3 hours lecture. (021772)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

ANSC 294 Principles of Rangeland Livestock Management 3 Units
Typically Offered: Spring only
Students examine the ecological principles that cause rangelands, including grasslands, shrublands, woodlands, and deserts, to change or stay the same. How humans use livestock to manage these ecosystems is explored. 3 hours lecture. (022025)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

ANSC 298 Special Topics 1-3 Units
Typically Offered: Inquire at department
This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (020968)
Grade Basis: Graded
Repeatability: You may take this course more than once
Course Attributes: Lower Division

ANSC 299 Special Problems 1-3 Units
Prerequisite: Faculty permission.
Typically Offered: Fall and spring
This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 9 hours supervision. (020959)
Grade Basis: Credit/No Credit
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Lower Division

ANSC 301 Intermediate Animal Systems 3 Units
Prerequisite: ANSC 101.
Typically Offered: Fall only
An overview of world and United States animal production systems, emphasizing the scientific principles and management of large and small ruminants (beef, dairy, sheep, goats), monogastrics (swine, equine), as well as meat, poultry, and aquaculture. 2 hours laboratory, 2 hours lecture. (000455)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Lower Division

ANSC 320 Advanced Livestock Selection and Carcass Evaluation 3 Units
Typically Offered: Fall only
Develop skills in quality grading and yield grading animals both live and on the rail. Improve skills in selecting animals in pasture conditions and develop ability to explain decisions and be able to accurately describe their reasons. Numerous field trips to fairs and ranches will be required. 3 hours laboratory, 2 hours lecture. (000457)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 6 units
Course Attributes: Upper Division
ANSC 330 Animal Nutrition 3 Units
Prerequisite: ANSC 101, ANSC 230.
Typically Offered: Fall and spring
A study of the nutritive requirements of animals for maintenance, growth, lactation, reproduction and other bodily functions. Intermediary metabolism of nutrients, chemical and animal analysis of feedstuffs, design and implementation of nutrition studies and writing of a scientific paper. 3 hours lecture. (000465)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

ANSC 330L Applied Animal Nutrition Research 1 Unit
Prerequisite: ANSC 101, ANSC 330 (may be taken concurrently).
Typically Offered: Fall and spring
This course focuses on various laboratory and research techniques in the animal nutrition field. Students implement and conduct a course level research project, including sample preparation and analysis, and data collection and analysis. 3 hours laboratory. (022090)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 2 units
Course Attributes: Upper Division

ANSC 340 Reproductive Physiology of Domestic Animals 3 Units
Prerequisite: ANSC 101.
Typically Offered: Fall and spring
The physiological mechanisms of reproduction in domestic animal species. Principles of reproductive anatomy, gamete formation, endocrinology, cyclicity and parturition. The laboratory experience will emphasize theory learned in lecture and will include uses of reproductive technology to maximize reproductive efficiency and fertility. 3 hours lecture. (000467)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

ANSC 350 Meat and the Consumer 3 Units
Typically Offered: Fall only
Muscle growth and composition, nutritional and health concerns, meat safety and advances in product development, preparation and storage. 3 hours laboratory, 2 hours lecture. (000447)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

ANSC 360 Animal Health and Disease 3 Units
Prerequisite: ANSC 101.
Typically Offered: Fall and spring
A study of disease processes in livestock. Principles of disease organisms and the physiology of infection. Mechanisms in which the body combats infections, i.e., immune response. Herd health considerations for disease prevention and treatment. 3 hours lecture. (000466)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

ANSC 370 Livestock and Companion Animal Behavior 3 Units
Prerequisite: ANSC 101.
Typically Offered: Fall only
This course promotes an understanding of basic principles of livestock (i.e., food animals and horses) and companion animal (i.e., dogs and cats) behavior and its application of production, shelter, and household set ups. This course is structured to help students understand the role of animal behavior on welfare and/or productivity of livestock and companion species. This course has an emphasis on how livestock and companion animals communicate with their surroundings and how we can adjust their housing or management to address their needs in order to improve their well-being and/or productivity. 3 hours lecture. (022076)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

ANSC 372 Sheep Production 3 Units
Prerequisite: ANSC 101 or equivalent.
Typically Offered: Fall only
A study of approved practices in commercial and purebred sheep production with emphasis on production costs, disease, nutrition, genetic selection, production records, niche marketing, and contributions of sheep to environmental sustainability. 3 hours laboratory, 2 hours lecture. (022454)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

ANSC 373 Swine Production 3 Units
Prerequisite: ANSC 101 or equivalent.
Typically Offered: Spring only
A study of approved practices in commercial and purebred swine production with emphasis on production costs, disease, reproduction, nutrition, genetic selection, production records and niche marketing. 3 hours laboratory, 2 hours lecture. (022455)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

ANSC 374 Organic Dairy Production and Management 3 Units
Prerequisite: ANSC 101.
Typically Offered: Spring only
This course covers all scientific aspects of organic dairy production including soil fertility, grazing management, pasture and forage quality, nutritional ration balancing on pasture, enhancing dry matter intake on pasture, holistic herd health (including homeopathy, acupuncture and herbal medicine), organic methods to improve milk quality, organic calf management strategies, and the organic certification process and how to develop your Organic System Plan. The course also covers many new topics of discussion for organic research and development. 3 hours laboratory, 2 hours lecture. (021420)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division
ANSC 378  Poultry Meat and Eggs: Industry, Processing, and Products  
Prerequisite: ANSC 101.  
Typically Offered: Fall and spring  
This course covers the scope and importance of the poultry industry with an introduction to the basics of poultry science and modern methods of producing, processing, and marketing of poultry and poultry products. General topics include egg anatomy, production and functionality, poultry slaughter, meat quality, and value-added poultry products. Focus is also given to the science and practice of processing and products of poultry and eggs; physical, chemical, microbiological, and functional characteristics of value-added poultry products as they affect consumer acceptance, efficiency of production, and regulatory approval. 3 hours lecture. (022586)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 3 units  
Course Attributes: Upper Division  

ANSC 389  Internship in Animal Science  
Prerequisite: Prior approval of academic goals by the Internship Coordinator.  
Typically Offered: Spring, summer, fall  
This course is an internship offered for 1.0-3.0 units. You must register directly with a supervising faculty member. Work experience with selected livestock operations is to be completed and supervised by faculty and staff of cooperating livestock ranch. 0 hours independent study. (000472)  
Grade Basis: Credit/No Credit  
Repeatability: You may take this course for a maximum of 15 units  
Course Attributes: Upper Division  

ANSC 394  Livestock Grazing Ecology and Management  
Typically Offered: Fall only  
This course examines how herbivores interact with their environment and how understanding of these interactions is applied to the management of grazing animals or the environments they inhabit or both. Emphasis is placed on the scientific basis for grazing management decisions and management designed to accomplish a variety of outcomes. 3 hours laboratory, 2 hours lecture. (022006)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 3 units  
Course Attributes: Upper Division  

ANSC 398  Special Topics  
Typically Offered: Inquire at department  
This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar. (000473)  
Grade Basis: Graded  
Repeatability: You may take this course more than once  
Course Attributes: Upper Division  

ANSC 399  Special Problems  
Prerequisite: Upper-division standing.  
Typically Offered: Fall and spring  
This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research in animal science under direct supervision of a faculty member. A maximum of 6 units may be applied toward a bachelor's degree in agriculture. 0 hours independent study. (000474)  
Grade Basis: Credit/No Credit  
Repeatability: You may take this course for a maximum of 6 units  
Course Attributes: Upper Division  

ANSC 440  Physiology of Domestic Animals  
Prerequisite: ANSC 101, CHEM 107. Recommended: CHEM 108.  
Typically Offered: Fall and spring  
Comparative study of the physiology of organ systems, with major emphasis on farm animals. 3 hours laboratory, 2 hours lecture. (000456)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 3 units  
Course Attributes: Upper Division  

ANSC 450  Food Sanitation and Quality Control  
Prerequisite: ANSC 101; CHEM 107 or CHEM 111.  
Typically Offered: Spring only  
This course is intended for students involved in producing, selling, and handling food products who are interested in a course on principles of food sanitation and quality control from a management standpoint. 3 hours seminar. (000468)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 3 units  
Course Attributes: Upper Division  

ANSC 470  Animal Welfare  
Prerequisite: ANSC 360, ANSC 370 or faculty permission.  
Typically Offered: Spring only  
This course provides an introduction to the scientific approaches for assessing animal welfare. For that, we discuss animal welfare metrics, data collection, and the type of questions that need to be asked for the state of an animal's welfare to be assessed. We also discuss ethical views and the role of different stakeholders in law and policy development. 3 hours lecture. (022276)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 3 units  
Course Attributes: Upper Division  

ANSC 471  Advanced Beef Cattle Management and Production  
Prerequisite: ANSC 101, ANSC 271 or faculty permission.  
Typically Offered: Spring only  
Advanced instruction of world and United States beef production systems. Investigation of the segmentation of the beef industry, including seedstock, commercial cow-calf, stocker, feedlot, packer, retailer and consumer. Integrated beef production systems are evaluated based on consideration of genetics, nutrition, health, reproduction, product, forage management and marketing. 3 hours laboratory, 2 hours seminar. (000459)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 3 units  
Course Attributes: Upper Division  

ANSC 474  Dairy Production and Management  
Prerequisite: ANSC 101.  
Typically Offered: Spring only  
A comprehensive study of large dairy management with emphasis placed on efficient reproduction and nutrition. Additional studies include evaluation of replacement heifer development scenarios, cow comfort, and record keeping systems. 3 hours laboratory, 2 hours lecture. (000463)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 3 units  
Course Attributes: Upper Division  

ANSC 489  Internship in Animal Science  
Typically Offered: Fall and spring  
3 hours lecture. (000480)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 15 units  
Course Attributes: Upper Division
### Plant and Soil Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Prerequisite/When Offered</th>
<th>Typically Offered</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PSSC 101 Introduction to Plant Science</strong></td>
<td>3 Units GE</td>
<td></td>
<td>Fall and spring</td>
<td>Plant structure, growth, reproduction, and responses to the environment.</td>
</tr>
<tr>
<td><strong>PSSC 160 West Coast Crop Production</strong></td>
<td>1 Unit</td>
<td></td>
<td>Inquire at department</td>
<td>Study of people, careers, crops, and systems related to crop industries in the area. An opportunity to meet with professionals and learn about the skills required for research, management, and services that support agricultural production. Meets the second half of the semester. 1 hour lecture.</td>
</tr>
<tr>
<td><strong>PSSC 198 Special Topics</strong></td>
<td>1-3 Units</td>
<td></td>
<td>Fall and spring</td>
<td>This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours supervision.</td>
</tr>
<tr>
<td><strong>PSSC 199 Special Problems</strong></td>
<td>1-3 Units</td>
<td></td>
<td>Fall and spring</td>
<td>This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 9 hours supervision.</td>
</tr>
<tr>
<td><strong>PSSC 250 Introduction to Soil Science</strong></td>
<td>3 Units</td>
<td></td>
<td>Fall and spring</td>
<td>Soil biology, fertility, chemistry, physical properties, taxonomy and their applications to agricultural management and environmental enhancement. Relationships of soils to the world food supply and population. 3 hours laboratory, 2 hours lecture.</td>
</tr>
<tr>
<td><strong>PSSC 256 California Orchard Production and Management</strong></td>
<td>3 Units</td>
<td></td>
<td>Fall and spring</td>
<td>An evaluation of various decisions made in the management of fruit and nut trees. Management topics include studies of climate zones, soil selection, financing, farm organization, irrigation systems, field layout, varietal selection, nutritional needs, harvesting, labor management, marketing, and budgeting. The student is required to prepare a budget and calendar of orchard operations. 3 hours laboratory, 2 hours lecture.</td>
</tr>
<tr>
<td><strong>PSSC 264 California Orchard Production and Management</strong></td>
<td>3 Units</td>
<td></td>
<td>Fall only</td>
<td>An intensive 6-unit, one-year course in agricultural research. See College office for details. Open only to students with at least a 3.0 GPA in the major. The course consists of a faculty-supervised research project, a thesis, and a public presentation. 18 hours independent study.</td>
</tr>
<tr>
<td><strong>PSSC 274 Greenhouse Management</strong></td>
<td>3 Units</td>
<td></td>
<td>Fall only</td>
<td>Greenhouse construction, environment, and management practices, including heating and cooling, irrigation, fertilization, and pest control. 3 hours laboratory, 2 hours lecture.</td>
</tr>
<tr>
<td><strong>PSSC 298 Special Topics</strong></td>
<td>1-3 Units</td>
<td></td>
<td>Inquire at department</td>
<td>This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar.</td>
</tr>
<tr>
<td><strong>PSSC 299 Special Problems</strong></td>
<td>1-3 Units</td>
<td></td>
<td>Fall and spring</td>
<td>This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. A maximum of 6 units of special problems may be applied toward a bachelor's degree in agriculture. 9 hours supervision.</td>
</tr>
</tbody>
</table>
PSSC 305  Introduction to Wines 3 Units
Prerequisite: At least 21 years of age.
Typically Offered: Fall only
Grape-growing, and winemaking in California wine regions. Wine
and food matching. Sensory evaluation. 1 hour discussion, 2 hours
lecture. (007781)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

PSSC 309A  Directed Work in Field and Row Crops 2 Units
Prerequisite: AGET 150 or faculty permission.
Typically Offered: Fall and spring
Directed work and discussion on all aspects of field and row crop
production practices applicable to northern California. 2 hours activity, 1
hour discussion. (007773)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Upper Division

PSSC 309B  Directed Work in Vegetable Crops 2 Units
Typically Offered: Fall and spring
Directed work and discussion on all aspects of vegetable crop production
practices applicable to northern California. 2 hours activity, 1 hour
discussion. (007788)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Upper Division

PSSC 330  Rangeland Resources and Management 3 Units
Typically Offered: Fall only
A survey of North American rangeland resources and the principles of
their use and management, including basic plant-animal-soil relationships
and multiple uses. 3 hours lecture. (007775)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

PSSC 340  Economic Entomology 4 Units
Typically Offered: Fall only
A survey of the structure and function of insects, leading to a
fundamental understanding of applied insect ecology and taxonomy.
Particular emphasis is placed on arthropod species of economic
importance to humans. 3 hours laboratory, 3 hours lecture. (007797)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 4 units
Course Attributes: Upper Division

PSSC 343  Introduction to Weed Science 3 Units
Prerequisite: AGRI 331.
Typically Offered: Spring only
Identification, modes of spread, and population ecology of weeds
and other invasive plant species. Biological, cultural, mechanical, and
chemical control of weeds and invasive species. Methods of crop/
vegetation management to control and reduce weed populations. 3 hours
laboratory, 2 hours lecture. (007801)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

PSSC 345  Horticultural Therapy 3 Units
Typically Offered: Spring only
An introductory course in horticultural production as therapy. Focus is
on the therapeutic benefits available to people engaging in horticultural
activities. Covers the special needs associated with elderly, veterans,
children and adolescents, and people with disabilities. Overview of
techniques and training requirements for therapists in garden and
greenhouse activates. Applicable to students in recreation, kinesiology,
nursing, psychology and horticulture. This course fulfills a partial
requirement for becoming a registered horticultural therapist. 3 hours
lecture. (021807)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

PSSC 353  Plant Protection Materials, Methods, and
Regulations 3 Units
Prerequisite: CHEM 107 or CHEM 111; PSSC 250.
Typically Offered: Fall only
An examination of materials and application methods used for protecting
the health of plants in a manner that is safe for the environment,
applicator, and consumer. Comprises the laws and regulations, safety,
application, properties, mode of action, toxicology, and environmental
impacts of pesticides, fertilizers, and other materials used in agriculture.
3 hours laboratory, 2 hours lecture. (007806)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division; Sustainable Course

PSSC 356  Soil Quality and Health 3 Units
Prerequisite: PSSC 250 or faculty permission.
Typically Offered: Spring only
Course examines the capacity of the soil to function within natural and
managed ecosystems to sustain plant/animal productivity, maintain or
enhance water and air quality, and support human health and habitation.
Soil quality factors include biological, physical, and chemical soil
properties. 2 hours activity, 2 hours lecture. (007808)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division; Sustainable Course

PSSC 361  Production of Annual Crops 3 Units
Prerequisite: PSSC 101.
Typically Offered: Fall only
This course covers the requirements and cultural practices needed for
maximizing yields of annual field crops. Principles affecting growth
development and management will be covered. For field experience,
students are advised to enroll in PSSC 309A/PSSC 309B. 3 hours
laboratory, 2 hours lecture. (007810)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division

PSSC 363  Forage Crops 3 Units
Prerequisite: PSSC 101 or PSSC 330.
Typically Offered: Inquire at department
Grasses and legumes; their production and management for irrigated
pastures, hay, silage, and seed. Plant characteristics and adaptation. 3
hours laboratory, 2 hours lecture. (007812)
Grade Basis: Graded
Repeatability: You may take this course for a maximum of 3 units
Course Attributes: Upper Division
### PSSC 365 Sustainable Vegetable Crop Production  
**Prerequisite:** PSSC 101.  
**Typically Offered:** Fall only  
An experiential, field-oriented course covering origin, nutrition, environmental requirements, and management strategies for the sustainable production of vegetables. It provides students with the opportunity to appreciate the vast array of vegetables in the world and develop management skills for commercial production of vegetables in a sustainable manner. 3 hours lecture.  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division

### PSSC 366 Fruit and Nut Production  
**Prerequisite:** AGRI 331, PSSC 101.  
**Typically Offered:** Spring only  
Managing and optimizing the fruit and nut production system. Selection of planting sites and varieties, tree training and pruning, pollination, thinning, irrigation, mineral nutrition, and pest management are included. 3 hours laboratory, 2 hours lecture.  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division

### PSSC 369 Seed Production  
**Prerequisite:** PSSC 101.  
**Typically Offered:** Spring only  
This is an overview of seed production principles and practices that involve discussion of suitable environmental and nutritional conditions, as well as specific applied methods for individual important crops to produce quality seeds for the market. The lectures provide a general overview through detailed presentations. Students will also be involved in student-led presentations and discussions on seed production practices of specific crops. Seed testing methods and identification skills will also be emphasized. 3 hours lecture.  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division

### PSSC 389 Internship in Plant and Soil Science  
**Prerequisite:** Junior standing, faculty permission.  
**Typically Offered:** Fall and spring  
This course is an internship offered for 1.0-6.0 units. You must register directly with a supervising faculty member. Internship with private industry, state, federal, international, or non-profit organization. Selected topic must be in a Plant and Soil Science Option area. 0 hours independent study.  
**Grade Basis:** Credit/No Credit  
**Repeatability:** You may take this course for a maximum of 15 units  
**Course Attributes:** Upper Division

### PSSC 390 Food Forever: Comparisons of Sustainable Food Production Systems  
**Prerequisite:** GE Oral Communication (A1); GE Written Communication (A2); GE Critical Thinking (A3); GE Mathematics/Quantitative Reasoning (B4) requirements, or consent of the instructor.  
**Typically Offered:** Fall only  
How ecological factors, technology, and human values interact to determine available choices of food and its production. Consequences of these choices in terms of community structures, resource allocations, and stability of agro-ecosystems. This course is not intended for majors, but open to them. 3 hours lecture.  
**General Education:** Upper-Division Scientific Inq/Quant Reason (UDB); Agriculture, Food, and Environment Pathway; Global Studies Pathway  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division; Global Cultures; Sustainable Course

### PSSC 392 World Food and Fiber Systems  
**Prerequisite:** GE Oral Communication (A1); GE Written Communication (A2); GE Critical Thinking (A3); GE Mathematics/Quantitative Reasoning (B4) requirements, or consent of the instructor.  
**Typically Offered:** Spring only  
A study and analysis of various world agriculture systems that provide food and fiber. Environmental, technological, socio-economic, and political factors. 3 hours lecture.  
**General Education:** Upper-Division Scientific Inq/Quant Reason (UDB); Agriculture, Food, and Environment Pathway; Global Studies Pathway  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division; Global Cultures; Sustainable Course

### PSSC 398 Special Topics  
**Typically Offered:** Inquire at department  
This course is for special topics offered for 1.0 - 3.0 units. Typically the topic is offered on a one-time-only basis and may vary from semester to semester and be different for different sections. See the class schedule for the specific topic being offered. 3 hours seminar.  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 3 units  
**Course Attributes:** Upper Division; Global Cultures; Sustainable Course

### PSSC 399 Special Problems  
**Typically Offered:** Fall and spring  
This course is an independent study of a topic or problem and is offered for 1.0-3.0 units. Students must register with a supervising faculty member. Study/research in plant science and soil science under direct supervision of a faculty member. A maximum of 6 units may be applied toward a bachelor's degree in agriculture. 0 hours independent study.  
**Grade Basis:** Graded  
**Repeatability:** You may take this course more than once  
**Course Attributes:** Upper Division

### PSSC 441 Principles of Integrated Pest Management  
**Prerequisite:** AGRI 331; BIOL 446, PSSC 340, or PSSC 343.  
**Typically Offered:** Spring only  
An introduction to the principles and mechanisms of integrated management of insect pests, plant pathogens, and weeds, dealing with such areas as the agro-ecosystem, population dynamics, and specific approaches to pest management. 3 hours lecture.  
**Grade Basis:** Graded  
**Repeatability:** You may take this course for a maximum of 6 units  
**Course Attributes:** Upper Division
PSSC 451  Soil Genesis and Classification  3 Units  
Prerequisite: PSSC 250 or faculty permission. 
Typically Offered: Spring only 
An examination of the factors of soil formation, criteria and systems of 
soil classification. The laboratory consists of five all-day field trips. 3 
hours laboratory, 2 hours lecture. (007837)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 3 units  
Course Attributes: Upper Division  

PSSC 453  Soil Fertility and Plant Nutrition  3 Units  
Prerequisite: PSSC 250 or faculty permission. 
Typically Offered: Fall only 
Properties of soils, fertilizers, and plant materials. Soil amendments and 
soil reaction effects on plants. Fertilizer usage. 3 hours laboratory, 2 
hours lecture. (007840)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 3 units  
Course Attributes: Upper Division  

PSSC 459  Crop Physiology  4 Units  
Prerequisite: PSSC 101, PSSC 250 (or equivalents). 
Typically Offered: Spring only 
This course is designed to examine the yield potential of field crops 
in various environments. Students learn about the importance of crop 
physiology in crop production and breeding. Topics include canopy 
architecture and radiation interception, photosynthesis and respiration, 
carbon and nitrogen allocation, plant-water relationships, and plant 
response to restricted environments. The course provides practical 
experience using instrumentation to measure physiological processes 
in laboratory and field. Special emphasis includes design of field and 
greenhouse experiments. 3 hours laboratory, 3 hours lecture. (021698)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 4 units  
Course Attributes: Upper Division  

PSSC 489  Internship: Plant/Soil Science  1-3 Units  
Prerequisite: PSSC 389, senior/graduate standing, faculty permission. 
Typically Offered: Fall and spring 
Internship with private industry, state, federal, international, or non-profit 
organization. Selected topic must be in a PSSC option area. 9 hours 
supervision. (007861)  
Grade Basis: Credit/No Credit  
Repeatability: You may take this course for a maximum of 15 units  
Course Attributes: Upper Division  

PSSC 498  Special Topics  1-3 Units  
Typically Offered: Fall and spring 
This course is for special topics offered for 1.0-3.0 units. Typically the 
topic is offered on a one-time-only basis and may vary from term to term 
and be different for different sections. See the Class Schedule for the 
specific topic being offered. 3 hours seminar. (007864)  
Grade Basis: Graded  
Repeatability: You may take this course more than once  
Course Attributes: Upper Division  

PSSC 499  Special Problems  1-3 Units  
Prerequisite: Faculty permission. 
Typically Offered: Fall and spring 
This course is an independent study of special problems offered for 
1.0-3.0 units. You must register directly with a supervising faculty 
member. 0 hours independent study. (007865)  
Grade Basis: Credit/No Credit  
Repeatability: You may take this course for a maximum of 6 units  
Course Attributes: Upper Division  

PSSC 499H  Honors Research in Plant and Soil Science  6 Units  
Prerequisite: Faculty permission. 
Typically Offered: Fall and spring 
An intensive 6-unit, one-year course in agricultural research. See College 
office for details. Open only to students with at least a 3.0 GPA in the 
major. The course consists of a faculty-supervised research project, a 
thesis, and a public presentation. 18 hours independent study. (020213)  
Grade Basis: Graded  
Repeatability: You may take this course for a maximum of 6 units  
Course Attributes: Upper Division  

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